

REMARKS

The applicants express their appreciation to Examiner Lupino and Examiner Crawford for meeting with the applicants' representatives on May 22, 2007, to discuss this application, the invention described and claimed therein, the recent Office action, and the prior art cited therein. The applicants also note with appreciation that Examiner Lupino generally agreed to give favorable consideration to claim amendments like those presented in the above listing of the claims, in view of the prior art she is currently aware of.

Turning to the present Office action, claims 18-25 were examined and rejected. As detailed in the above listing of the claims, all previously presented claims (1-26) have been canceled and new claims 27-45 have been added, where only claims 27 and 38 are independent claims. Before relating the new claims to the prior art of record, though, the application will generally be related to the prior art of record.

As discussed in the Examiner's Interview, the disclosed apparatus and methods represent a departure from the operating principles relied on and taught by prior art vehicle restraints. In particular, the application relates to a vehicle brace that exerts a substantial, but limited, reactive force upward against a rear edge of a vehicle at a loading dock, for the intended purpose of eliminating, dampening and/or minimizing, downward movement of the vehicle as it is loaded and unloaded (see the Abstract of the current application). In sharp contrast, "[i]nstead of obstructing vertical movement of the vehicle during its loading or unloading [prior art vehicle restraints] do just the opposite, they accommodate or allow the vehicle the freedom to move vertically" (Current Application, pg. 2, ln. 33 – pg. 3, ln. 2).

The prior art that serves as the bases of rejection in the present action supports this assertion by offering clear explanations of how vertical vehicle movement is accommodated. Hageman teaches that “[t]he compressible nature of the fluid in the cylinder enables the hook to follow rising and falling of the truck bed during the loading operation” (Hageman Abstract). Similarly, Hahn teaches that “a spring . . . compensates for incidental vertical movement of the ICC bar caused by the truck being loaded or unloaded [while] [l]arge downward movement of the ICC bar is accommodated by a clutch associated with the winch” (Hahn Abstract).

As the previous quotations suggest, the prior art recognized that vehicles would move vertically during the loading operation, but, instead of taking steps to slow, stop and/or prevent this movement, the prior art attempted to ensure that the restraint would follow such vertical movement while still remaining engaged. In other words, prior art vehicle restraints went “along for the ride” during the loading and unloading operation. However, simply going “along for the ride” does nothing to solve numerous problems, including (1) excessive wear on dock seals, shelters, bumpers, and levelers, (2) a disconcerting drop experienced by material handling equipment operators (a feeling of weightlessness), and (3) dock walk and trailer creep (vertical movement of the trailer is accompanied by an equal amount of horizontal movement). (See generally, pages 1-2 of the Current Application). These problems are exacerbated by vehicles with “air-ride” suspensions, which have become very common in the industry in recent years.

Because Hageman, Hahn, or other such vehicle restraints do not intend to minimize or prevent downward movement of a vehicle, they generally offer no structure, means, or method of achieving that function. For example, Hageman teaches an air

cylinder that is relatively small to enable the restraint to follow, but not impede, vertical movement of the vehicle. Furthermore, the air cylinder of Hageman is either filled with air (pressurized) or it is empty (not pressurized) – there is no teaching of a relief that opens once the applied forces reach a certain level.

The same is true for Hahn, which relies on springs and a clutch to bias the restraint. Hahn's springs apply force at a constant rate and offer no relief that would open when the applied forces reach a certain, predetermined level. Hahn's clutch does not act as a relief, as it simply allows for a greater stroke, or range of vertical movement, than can be offered by springs alone, allowing the winch to pay out a cable as needed to follow the drop of the vehicle (col. 4, ll. 30-40). The winch may then be re-actuated to raise the restraint, if the vehicle rises. Again, these "special" accommodations are made to enable the restraint to follow a vehicle's vertical movement – to simply "go along for the ride."

The disclosed apparatus and methods, on the other hand, take the opposite approach by taking active steps to prevent, slow, dampen, and/or minimize, the vertical movement that had previously occurred during the loading operation. Thus, instead of simply going "along for the ride," the disclosed apparatus and methods address the related problems by preventing or severely limiting the vertical "ride."

However, the applicants also recognized that a solid, immovable support structure (e.g., a hydraulic jack) that completely eliminates vertical movement of the vehicle would present other problems. When material handling equipment traverses the vehicle, the weight of material handling equipment in combination with the weight of the vehicle provides a significant downward force for the rigid support structure to counteract. The

resulting (significant) upward reactive force necessary to oppose this force to eliminate any movement would be reacted primarily through the ICC bar and the underside of the vehicle's rear edge, neither of which may be designed to sustain such loads (see pg. 3, ll. 11-13). "Thus, holding the trailer bed completely immovable could damage the ICC bar or other parts of the trailer" (pg. 3, ll. 13-15).

Accordingly, the applicants recognized that a need exists for an apparatus and methods that address the problems associated with vertical movement of a vehicle during the loading operation while not causing a different set of problems associated with completely eliminating vertical movement (*i.e.*, a rigid support). The current disclosure strikes a balance between this opposing set of problems, offering an acceptable solution to both.

New Claims

As detailed in the above listing of the claims, the previously-examined claims have been canceled and new method claims 27-45 have been added. Claims 27 and 38 are independent claims. These new method claims capture the inventive characteristics detailed above and, as a result, define over the prior art of record.

Specifically, independent claim 27 recites a method of operating a vehicle brace comprising causing the vehicle brace to apply a reactive upward force to a vehicle's rear edge. The reactive upward force dampens downward movement of the vehicle's rear edge that would otherwise result from the applied weight of material handling equipment.

Independent claim 38, recites a method of stabilizing a vehicle, as material handling equipment traverses a rear edge of the vehicle. The method comprises exerting a reactive force upward against a rear edge of the vehicle to oppose a downward force

exerted by the vehicle as the material handling equipment traverse the rear edge of the vehicle. The reactive force is exerted such that the vehicle's rear edge remains at a substantially fixed height when the downward force is at or below a predetermined magnitude.

Both claims focus on exerting a reactive force upward against a vehicle to minimize downward movement of that vehicle during the loading/unloading operation. The claims also include limitations that reference the size, or magnitude, of the reactive force, thereby capturing the shift in the operating principle that is embodied by the current invention.

Conclusion

Reconsideration of the application and allowance thereof are respectfully requested. If there is any matter that the examiner would like to discuss, the examiner is invited to contact the undersigned representative at the telephone number set forth below.

The Commissioner is hereby authorized to charge any deficiency in the amount enclosed or any additional fees which may be required during the pendency of this application under 37 CFR 1.16 or 1.17 to Deposit Account No. 50-2455. Please refund any overpayment to Hanley, Flight & Zimmerman, LLC at the address below.

Respectfully submitted,
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